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No. 107,

For the Week ending January 19, 1878.

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NATURAL HISTORY COLLECTIONS AS EDUCATORS.

The project of establishing a Zoölogical Garden in Central Park, in this city, on the model of that in Regent's Park, in London, England, is again being brought forward. A number of wealthy citizens have formed a Zoölogical Society and propose to start with a capital of over $100,000. The designated ground is a tract of 20 acres on the west side of the park, just above 96th street and near the new Natural History Building. The society will enclose the site, erect buildings, etc., and charge a small admission fee except on one free day per week.

The collection of living animals already in the park is now very meagre. Lack of funds at the disposal of the authorities have prevented its enlargement or even the erection of suitable edifices for its reception, and in fact, as the President of the Park Commission expresses it, the city keeps "a kind of hotel for menagerie animals," which belong to shows and circuses, and for which care and housing are provided, the owners paying only for food. The condition of these unfortunate brutes has of late been pitiable, and has elicited no small share of the attention of Mr. Bergh and his humane society. The public however continue to manifest great interest in the collection, and to this fact, coupled probably with the recent opening of the new Museum of Natural History, may be ascribed the renewing of the enterprise above noted.

It is perfectly obvious, we think, that collections of natural history specimens, whether the same be of living animals or of fossil remains, are valuable only in an educational regard; and if the same are intended for popular edification, then, unless they are so arranged as to carry the proper scientific instruction to unscientific intellects, they do not fulfill their purposes. This is a simple and very necessary requirement, yet it appears to be systematically neglected, with the result of substituting merely the transitory interest felt in looking at strange objects for the permanent one which might be aroused if their inter-connection and intrinsic peculiarities were more clearly set forth. The Aquarium, for example, in this city, established a year ago, contains a really remarkable collection of marine creatures and it is especially rich in curious connecting links. The visitor may begin with the animated plants, the zoöphytes, trace the development up to the tubellaria and gliding worms, and so on, through the eels and similar types to the true fish. Still advancing, he may find in the green maray perhaps the closest link between the fish and the serpent; in the proteus, the menopome and the axolotl, the links between the gill-breathing and the air-breathing animal; in the seals and sea lions the links between the warm-blooded land creatures and the cold-blooded inhabitants of the sea; in the flying foxes the link between birds and brutes; and thus he may continue tracing the chain of development as demonstrated by Haeckel and other evolutionists. In the kingyo and the other curious Japanese fish he may see the wonderful results of artificial selection carried on through a long number of years; in one fish he will find eyes developed until they look like small telescopes; in another tail and fins converted into films which resemble festoons of lace. This is the merest outline of some important lessons which might be learned by mere inspection if the opportunity were provided say by suitably arranging the collection and posting explanatory placards. Another lesson is taught in an admirable way by the plan on which the famous Berlin Aquarium is constructed. There the visitor descends from story to story, tanks always surrounding him, and the accessories being so arranged as to convey the idea that he is actually going down in the sea depths. In accordance with this plan, the fish are disposed so that in the upper story those creatures always found at or near the surface are met with, while in the lowest, the deep sea fishes and crustaceans are encountered, those dwelling in intermediate regions being between.

To return to the Zoölogical Garden plan, the above will convey a general notion of our idea of what the project should be. That is to say, the animals should be put in enclosures imitating as closely as possible their natural haunts; they should be allowed the utmost freedom of movement compatible with safety; their relative arrangement should be such as to indicate their relationships and descents in the clearest possible manner to the average intellect, and brief information regarding each specimen in simple language should be placed conspicuously upon its enclosure. Collections of fossils, shells, insects, stuffed animals, minerals, or other geological specimens, or herbariums should likewise be exhibited in the full meaning of that term, not merely ticketed with a Latin label and put in a glass case. It will require considerable ability and a full apprehension of what interests the public to carry out the ideas above indicated; but we believe that such naturalists as Professors Agassiz, Bickmore, Marsh, or Morse are fully equal to the task, and the result would be a Natural History Museum creditable alike to its founders and to the metropolis.

PREVENTING COLLISIONS AT SEA.

An invention of some sort is needed whereby a vessel may signal to other ships in her vicinity the course which she is steering, so that collisions may thus be avoided. The means at present used to this end are very inadequate, as is abundantly proved by the frequency with which collisions occur. The conditions to be considered are, first, those under which neither approaching vessel can see the other, as in the case of thick weather by day or night, and second, those always existing after nightfall when a ship's whereabouts is determined by the position of her lights. It will be evident that an invention of the kind needed must combine some sound-ing apparatus for fogs and some new method of signalling by lights for ordinary night use.

At the present time, sailing ships under way at night carry a green light on the starboard and a red light on the port side. These lanterns are so arranged as to throw their illumination over an arc of 90° to the fore and aft axis of the vessel. Steamers carry in addition a white mast head light. By the relative position of these lights the pilot of an approaching vessel determines which way to steer. If for example he sees a red light only, he knows the other vessel is crossing his bows and moving from right to left, if a green light she is moving in the opposite direction, if both lights are visible she is coming directly bows on. This however is very inaccurate, for the moment the coming vessel steers at a slight angle from direct approach, then one or the other of her side lights immediately becomes invisible. The approaching helmsman, then, has no way of telling at what angle the other vessel is moving, whether she be directly crossing his bow, or at 90° to his own keel, or at a very much smaller angle. In one case the chances of collision would be less than in the other.

During fogs steamers usually blow their whistles at intervals; they also blow one or two sharp blasts on approaching another vessel, according as they mean to go to one hand or the other. A sailing vessel during a fog sounds her bell or blows a fog horn, according as she is on one or the other tack.

It is clear that these very rough means of denoting position leave a great deal to the guess work or judgment of the helmsman, much more indeed than would be the case did a good system of signals exist, by which a vessel, by sound or by lights or by a combination of both, could indicate her course. One signal for each point of the compass would be needed, making 32 in all, and the requirements would be simplicity, clearness, and readiness in changing one signal for another. A really efficient set of such signals would probably be adopted by all maritime nations and would prove very remunerative to the inventor.

CARBON BURNED IN AN ELECTRO-CHEMICAL BATTERY.

It seems probable that when the discovery shall have been made of how to oxidize carbon in the galvanic battery, the cheapest source of electricity will have been attained. The most economical means of producing a current now known is by the magneto electric machine driven by a steam engine, the energy of the coal being converted into electricity with less proportionate waste than under any other circumstances.

M. Jablochkoff, the inventor of the electric candle, has lately been experimenting upon a battery wherein carbon is to be consumed. From the note describing the same, which he contributes to the French Academy of Sciences, he appears chiefly to have renewed the experiments of Crookes, and the results which he reports are, therefore, to be ascribed to the addition of certain metallic salts, which must exercise a potent effect toward increasing the power of his pile. Crookes' battery, in which carbon is oxidized, consists of an iron ladle, which serves both as a containing vessel and as the non-attackable electrode. In this he melts nitrate of potash, and into the liquid thus produced he plunges his carbon. The oxygen in the nitrate with the carbon produces carbonic acid, which unites with the remaining potash, forming carbonate of potash, and by the chemical action a current of electricity, which "affects the galvanometer," is liberated. A better current is obtained by a plate of platinum placed with the carbon in the fused salt.

Jablochkoff's new plan is essentially the same. He rejects the platinum in favor of iron alone, and suspends his carbon in a wire basket in the liquid; but he says by adding different metallic salts he is enabled to vary the power of the battery and the rapidity of expenditure of carbon, and with these salts there is received a galvano-plastic deposit of the metals on the non-attackable electrode.

The electro-motive force of the battery varies between 2 and 3 units, according to the nature of the metallic salts used, and is, therefore, superior to that of the Bunsen or Grenet elements. The Bunsen pile gives at maximum 1·8 units, and the Grenet 2, or under best conditions, 2·1 units. During the working of the battery, there is a large disengagement of carbonic acid and other gases, which M. Jablochkoff proposes to store up and use as motive power.

DRAWING ON THE BLACKBOARD.

The chalk used should be square in section, so that, when desired, a line of uniform width can be obtained, which is difficult, if not impossible, with conical-shaped pieces of chalk. A short wooden chalk or crayon holder with a bunch of wash-leather, chamois skin, or soft cloth, is a good device for keeping the fingers free from chalk, and erasing lines. Blackboard compasses and "straight edges" of different lengths prove useful to those inexpert in drawing circles, curves, and straight lines by the eye, but constant care and practice will, in course of time, enable the delineator to dispense with frequent use of them. They should be used as seldom as possible.

Vertical lines should be drawn from above downwards; the weight of the hand and arm should be allowed to fall naturally. The delineator should stand with his right shoulder opposite the vertical line to be drawn Horizontal lines are made with the greatest facility when a fixed and firm point has been made to the left, and the arm and body are moved with the hand from left to right, thus steadying